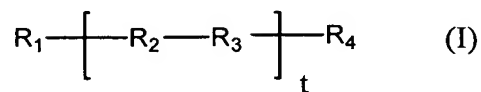


## CLAIMS

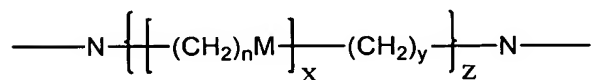
I claim:

1. A light emitting molecule having the formula:



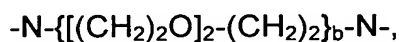
wherein t is an integer from 1 to 19; R1 is an anchoring group, said anchoring group including at least one atom selected from the group consisting of: a nitrogen atom, an oxygen atom, a silicon atom and a sulfur atom; R2 is a conjugated group; R3 is a light emissive group; and R4 is a charge transfer group.

2. The molecule of claim 1, wherein R3 has the formula:



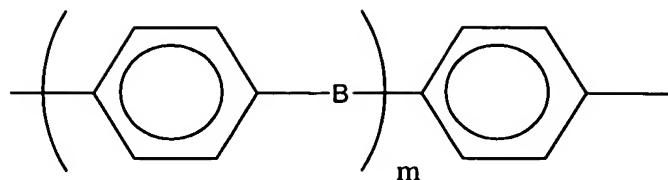
where M is independently selected from the group consisting of: O, NH, NR and S, where R is a small alkyl group; n and y are independently integers from 1 to 19; x is an integer from 1 to 19; and z is an integer from 1 to 3.

3. The molecule of claim 2, wherein R3 has the formula:



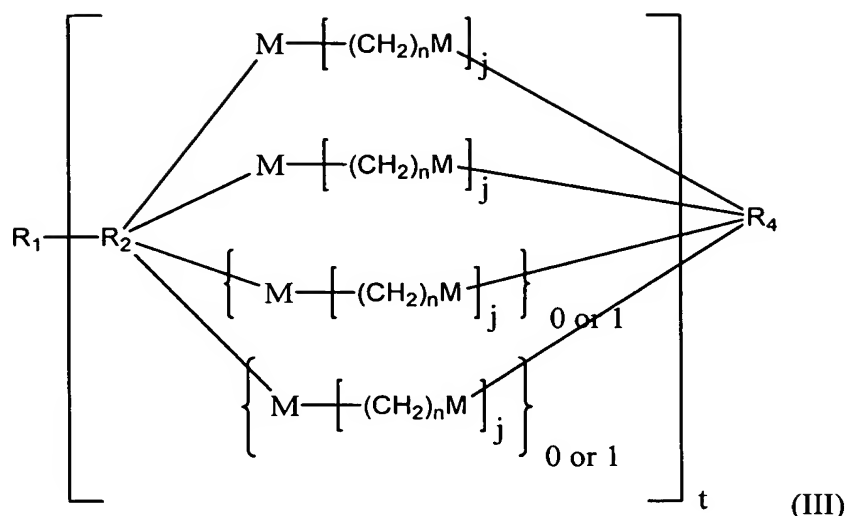
wherein b is 2 or 3.

4. The molecule of claim 1, wherein R2 comprises one or more groups selected from the group consisting of: alkenylene, alkynylene, imidylene, and arylene.
5. The molecule of claim 4, wherein R2 has the formula:



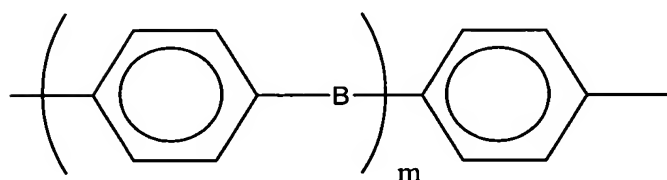
where m is an integer from 1 to 19 and B is an alkenylene, alkynylene or imidylene group.

6. The molecule of claim 5, wherein m is 1 to 6.
7. The molecule of claim 1, wherein R<sub>4</sub> is one or more groups selected from the group consisting of: hydrogen, alkyl groups, alkylene groups, alkenyl groups, alkenylene groups, alkynyl groups, alkynylene groups, aryl groups, arylene groups, iminyl groups, iminylene groups, hydride groups, halo groups, hydroxy groups, alkoxy groups, carboxy groups, thio groups, alkylthio groups, disulfide groups, cyano groups, nitro groups, amino groups, alkylamino groups, dialkylamino groups, silyl groups, and siloxy groups.
8. The molecule of claim 1, wherein the light emissive group has one or more metal atoms coordinated thereto.
9. The molecule of claim 8, wherein a metal atom coordinated to the light emissive group is a lanthanide metal ion.
10. The molecule of claim 9, wherein said lanthanide metal ion is one or more of Eu<sup>3+</sup>, Dy<sup>3+</sup>, and Tb<sup>3+</sup>.
11. A light emitting molecule having the formula:



wherein R1 is an anchoring group, said anchoring group including at least one atom selected from the group consisting of: a nitrogen atom, an oxygen atom, a silicon atom and a sulfur atom; R2 is a conjugated group; R4 is a charge transfer group; M is independently selected from the group consisting of: O, NH, NR and S where R is a small alkyl group; n is an integer from 1 to 3; j is an integer from 2 to 5; and t is an integer from 1 to 19.

12. The molecule of claim 11, wherein R2 comprises one or more groups selected from the group consisting of: alkenylene, alkynylene, imidylene, and arylene.
13. The molecule of claim 12, wherein R2 has the formula:



where m is an integer from 1 to 19 and B is an alkenylene, alkynylene or imidylene group.

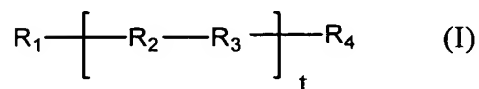
14. The molecule of claim 13, wherein m is 1 to 6.
15. The molecule of claim 11, wherein R4 is one or more groups selected from the group consisting of: hydrogen, alkyl groups, alkylene groups, alkenyl groups, alkenylene groups, alkynyl groups, alkynylene groups, aryl groups,

arylene groups, iminyl groups, iminylene groups, hydride groups, halo groups, hydroxy groups, alkoxy groups, carboxy groups, thio groups, alkylthio groups, disulfide groups, cyano groups, nitro groups, amino groups, alkylamino groups, dialkylamino groups, silyl groups, and siloxy groups.

16. The molecule of claim 11, wherein the molecule has one or more metal atoms coordinated thereto.
17. The molecule of claim 16, wherein a metal atom coordinated to the molecule is a lanthanide metal ion.
18. The molecule of claim 17, wherein said lanthanide metal ion is one or more of  $\text{Eu}^{3+}$ ,  $\text{Dy}^{3+}$ , and  $\text{Tb}^{3+}$ .
19. A light emitting device comprising:

two opposing substrates, each substrate having a conductive layer, said conductive layers positioned on the inner surfaces of the substrates,

one or more light emitting molecules positioned between the two opposing substrates, said light emitting molecules having the formula:



wherein  $t$  is an integer from 1 to 4;  $\text{R}_1$  is an anchoring group, said anchoring group including at least one atom selected from the group consisting of: a nitrogen atom, an oxygen atom, a silicon atom and a sulfur atom;  $\text{R}_2$  is a conjugated group;  $\text{R}_3$  is a light emissive group; and  $\text{R}_4$  is a charge transfer group.

20. The device of claim 19, wherein the light emissive group has one or more metal atoms coordinated thereto.

21. The device of claim 20, wherein a metal atom coordinated to the light emissive group is a lanthanide metal ion.
22. The device of claim 21, wherein said lanthanide metal ion is one or more of  $\text{Eu}^{3+}$ ,  $\text{Dy}^{3+}$ , and  $\text{Tb}^{3+}$ .
23. The device of claim 21, wherein the anchoring group is covalently bound to one of the opposing substrates.
24. A light emitting molecule, comprising:
  - an anchoring group;
  - a charge transport group having a first end and a second end, said first end of said charge transport group covalently bonded to said anchoring group;
  - a light emissive group covalently bonded to said second end of said charge transport group; and
  - a charge transfer group covalently bonded to said light emissive group.
25. The light emitting molecule of claim 24, wherein said charge transport group comprises a conjugated group.
26. The light emitting molecule of claim 25, wherein said conjugated group comprises at least one arylene group.
27. The light emitting molecule of claim 26, wherein said conjugated group comprises at least two arylene groups.
28. The light emitting molecule of claim 24, further comprising a metal ion coordinated to said light emissive group.
29. The light emitting molecule of claim 28, wherein said metal ion is a lanthanide metal ion.
30. The light emitting molecule of claim 29, wherein said lanthanide metal ion is one of  $\text{Eu}^{3+}$ ,  $\text{Dy}^{3+}$ , and  $\text{Tb}^{3+}$ .

31. A pixel element, comprising:
- one or more light emitting molecules, each light emitting molecule comprising:
- an anchoring group,
- a conjugated group bonded to said anchoring group;
- a light emissive group bonded to said conjugated group.
32. The pixel element of claim 31, wherein said anchoring group is configured to bond said light emitting molecule to a first conductive layer.
33. The pixel element of claim 31, wherein said light emissive group includes a luminescer.
34. The pixel element of claim 33, wherein said luminescer is a lanthanide metal ion.
35. The pixel element of claim 31, wherein said light emitting molecule further comprises a charge transfer group bonded to said light emissive group and configured to bond said light emitting molecule to a second conductive layer.
36. An organic light emitting device, comprising:
- a plurality of pixel elements arranged in an array, at least one pixel element of said plurality of pixel elements comprising a light emitting molecule that comprises
- an anchoring group covalently bound to a first conductive layer,
- a charge transport group bonded to said anchoring group,
- a light emissive group bonded to said charge transport group, and
- a charge transfer group bonded to said light emissive group and bonded to a second conductive layer.
37. The organic light emitting device of claim 36, wherein said plurality of pixel elements are substantially aligned with respect to a common direction.

38. The organic light emitting device of claim 36, wherein said charge transport group comprises at least one of an alkenylene group, an alkynylene group, an arylene group, and an iminylene group.
39. The organic light emitting device of claim 36, wherein said charge transport group comprises a conjugated group having a formula:  
$$(-A-B)_m-A,$$
  
wherein  $m$  is an integer in the range of 1 to 19, A is an arylene group, and B is one of an alkenylene group, an alkynylene group, and an iminylene group.
40. The organic light emitting device of claim 36, wherein said light emissive group comprises a lanthanide metal ion.
41. A display device, comprising:  
  
a first conductive layer;  
  
a second conductive layer; and  
  
a plurality of light emitting molecules positioned between said first conductive layer and said second conductive layer, at least one light emitting molecule of said plurality of light emitting molecules comprising  
  
an anchoring group bonded to said first conductive layer,  
  
a conjugated group bonded to said anchoring group,  
  
a light emissive group bonded to said conjugated group.
42. The display device of claim 41, wherein said plurality of light emitting molecules is substantially aligned with respect to a common direction, said common direction defines an angle with respect to a direction orthogonal to said first conductive layer, said angle being in the range of 0 to 25 degrees.
43. The display device of claim 41, wherein each light emitting molecule of said plurality of light emitting molecules extends between said first conductive layer and said second conductive layer.

44. The display device of claim 41, wherein said anchoring group comprises an atom configured to form a chemical bond with said first conductive layer, said atom being one of a nitrogen atom, an oxygen atom, a silicon atom, and a sulfur atom.
45. The display device of claim 41, wherein said conjugated group comprises a plurality of conjugated  $\pi$ -bonds.
46. The display device of claim 41, wherein said conjugated group comprises at least one arylene group.
47. The display device of claim 41, wherein said conjugated group further comprises at least one alkenylene group bonded to two successive arylene.
48. The display device of claim 41, wherein said conjugated group further comprises at least one alkynylene group bonded to two successive arylene.
49. The display device of claim 41, wherein said conjugated group further comprises at least one iminylene group bonded to two successive arylene groups.
50. The display device of claim 41, wherein said light emissive group is configured to emit light having a wavelength in the range of 410 nm to 650 nm.
51. The display device of claim 41, wherein said light emissive group comprises a metal ion.
52. The display device of claim 51, wherein said metal ion is a lanthanide metal ion.
53. The display device of claim 52, wherein said lanthanide metal ion is one of  $\text{Eu}^{3+}$ ,  $\text{Dy}^{3+}$ , and  $\text{Tb}^{3+}$ .
54. The display device of claim 41, wherein said at least one molecule further comprises a charge transfer group bonded to said light emissive group and to said second conductive layer.